

REMARKS/ARGUMENTS

Applicants wish to thank the Examiner for the care and time taken in acting on this application in the paper mailed December 21, 2005. Reconsideration is respectfully requested. Claims 1-3, 5-8 and 10-16 are currently pending.

Claims 1 and 3 to 6 were rejected under 35 U.S.C. § 103(a) as obvious over Japanese Patent Publication No. 4-6247 to Katsunori (hereinafter referred to as, "JP '247").

Claims 1, 3 to 8, and 10 to 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 3,294,527 or U.S. Patent No. 3,318,690 to Floreen et al. (hereinafter referred to as "Floreen '527", "Floreen '690", respectively).

Each of these rejections is separately and respectfully traversed. Favorable reconsideration is respectfully requested.

Amended claim 1 is directed toward a cast exhaust system for engines comprising pressure-containing components comprising an air-melted cast alloy of 0.2 to 0.4 wt. % of carbon, 0.1 to 1.5 wt. % of manganese, 34 to 36 wt. % of nickel, 2 to 3 wt. % of chromium, 0.01 to 0.08 wt. % of phosphorus, and a maximum of 0.02 wt. % of nitrogen, among other constituents. The claimed invention is a nitrogen- and graphite-free, precipitation-hardened alloy that distinguishes itself from other alloys by chemistry and by physical properties.

Applicants have traversed the Examiner's rejection of the claims as unpatentable over Floreen '527 or Floreen '690. Neither Floreen '527 nor Floreen '690 renders the subject matter of the claims obvious. Rather, Floreen '527 and '690 teach silicon- and manganese-containing alloys, respectively, with the amount of carbon not exceeding 0.03% and content of nickel up to about 20%. In contrast, the carbon and nickel content of the present invention as now claimed is significantly greater, with carbon at 0.2 to 0.4 wt. % and nickel at 34 to 36 wt. %. Applicant's specification at page 6, lines 27 to 31, to page 7, lines 1 to 4, discloses that the higher carbon content of the present invention results in increased yield strength and hardness of the matrix, but is below levels that would result in a graphitic second phase in the microstructure. A nickel concentration of 34 to 36 % corresponds with an invar alloy, which is typically used in steel with a very low expansion rate, but is not typically used in refractory steels capable of withstanding high temperatures as provided by the present invention. Nothing in either of the cited Floreen references would lead one of ordinary skill in the art to modify the references to include higher levels of carbon and nickel

and achieve the pressure-containing components comprising air-melted, substantially graphite and nitrogen-free cast alloy of the claimed composition.

Furthermore, claim I requires phosphorus in the amount of 0.01 to 0.08 wt. %. Both Floreen '527 and Floreen '690 teach that the steels should be "substantially devoid" of phosphorus (Floreen '690, col. 3, lines 27-29; Floreen '527, col. 3, lines 27-29). In contrast, 0.01 to 0.08 wt. % of phosphorous is recited in claim 1. Thus, far from suggesting the inclusion of phosphorous in the claimed weight percentages, Floreen '527 and '690 teach away from including any phosphorus in the disclosed cast alloy. Accordingly, the claimed invention is nonobvious.

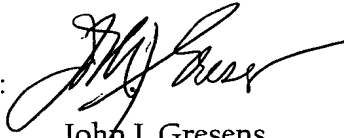
The claimed invention is also not made obvious by JP '247. JP '247 does not disclose the claimed ranges of nickel, carbon, chromium, phosphorus, or nitrogen. Specifically, the abstract of JP '247 discloses 5 to 30% of nickel, 0.02 to 0.1 % of carbon, 5 to 10% of chromium, and 0.05 to 0.4% of nitrogen, which is in contrast to 34 to 36 wt. % of nickel, 0.2 to 0.4 wt. % of carbon, 2 to 3 wt. % of chromium, and a maximum of 0.02 wt. % of nitrogen as claimed in the present application. The abstract of JP '247 does not disclose phosphorus.

The claimed invention is novel and non-obvious. Favorable reconsideration is requested. For the reasons set forth above, reconsideration of the rejections is respectfully requested.

In view of the amendments and remarks recited herein, the application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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